

CLAIMS

What is claimed is:

- 1 1. A system for detecting a downhole condition in a wellbore during a non-drilling wellbore
2 operation, the system comprising:
3 a tool string to be disposed within a wellbore;
4 a workpiece within the tool string for performing a non-drilling wellbore operation within the
5 wellbore; and
6 a condition sensing tool within the tool string for sensing a downhole condition.
- 1 2. The system of claim 1 wherein the workpiece comprises a fishing device.
- 1 3. The system of claim 1 wherein the workpiece comprises a cutting tool.
- 1 4. The system of claim 3 wherein the cutting tool comprises an underreamer.
- 1 5. The system of claim 3 wherein the cutting tool comprises a casing cutter.
- 1 6. The system of claim 1 wherein the downhole condition is a condition from the set consisting
2 essentially of torque, weight, tool string compression, tool string tension, speed of tool string
3 rotation, vibration, and direction of tool string rotation.
- 1 7. The system of claim 1 wherein the condition sensing tool of the system comprises:
2 an outer housing defining a sensor section therein; and
3 at least one sensor retained within the sensor section for detection of a downhole condition.

1 8. The system of claim 7 wherein the condition sensing tool further comprises a processing
2 section for receiving data relating to the downhole condition and transmitting the data to a remote
3 receiver.

1 9. The system of claim 7 wherein the condition sensing tool further comprises a processing
2 section for receiving data relating to the downhole condition and storing the data.

1 10. The system of claim 1 further comprising a power section.

1 11. A condition sensing tool for use within a wellbore during a non-drilling operation to detect at
2 least one downhole condition within the wellbore, the condition sensing tool comprising:
3 an outer housing defining an axial fluid flowbore therethrough;
4 a sensor section defined within the housing; and
5 at least one sensor for detecting at least one non-drilling downhole condition from the set of
6 conditions consisting essentially of torque, weight, tool string compression, tool string tension, speed
7 of tool string rotation, vibration, and direction of tool string rotation.

1 12. The condition sensing tool of claim 11 further comprising a power section within the housing
2 for supplying power to the sensor section.

1 13. The condition sensing tool of claim 11 further comprising a processing section for receiving
2 data relating to the downhole condition and transmitting the data to a remote receiver.

1 14. A method of performing a non-drilling downhole wellbore operation comprising:
2 integrating a workpiece and a condition sensing tool into a tool string;
3 disposing the tool string into a wellbore;

4 actuating the workpiece to conduct a non-drilling downhole operation; and
5 detecting at least one downhole condition with the condition sensing tool.

1 15. The method of claim 14 further comprising the step of transmitting information indicative of
2 the downhole condition to a remote location.

1 16. The method of claim 14 further comprising the step of storing information indicative of the
2 downhole condition within a processing section of the condition sensing tool.

1 17. The method of claim 14 wherein

- 2 a) the workpiece comprises a fishing tool for engaging a stuck member within a
- 3 wellbore;
- 4 b) the non-drilling downhole operation comprises a fishing operation to remove a stuck
- 5 member from the wellbore; and
- 6 c) the condition sensing tool detects weight and torque.

1 18. The method of claim 14 wherein:

- 2 a) the workpiece comprises an anchor latch;
- 3 b) the non-drilling downhole operation comprises unthreading of a threaded connection
- 4 within the wellbore; and
- 5 c) the condition sensing tool detects tool string compression and tool string tension.

1 19. The method of claim 14 wherein:

- 2 a) the workpiece comprises a casing cutter;
- 3 b) the non-drilling downhole operation comprises a casing cutting operation, and
- 4 c) the condition sensing tool detects speed and direction of rotation of the tool string.

1 20. The method of claim 14 wherein:

- 2 a) the workpiece comprises an underreamer;
- 3 b) the non-drilling downhole operation comprises an underreaming operation, and
- 4 c) the condition-sensing tool detects torque.

1 21. The method of claim 20 wherein the condition sensing tool also detects weight, speed of
2 rotation, and direction of rotation.

1 22. The method of claim 14 wherein:

- 2 a) the workpiece comprises a packer;
- 3 b) the non-drilling downhole operation comprises retrieval of the packer from a set
- 4 position within the wellbore; and
- 5 c) the condition-sensing tool detects torque and weight.

1 23. The method of claim 14 wherein:

- 2 a) the workpiece comprises a pilot mill;
- 3 b) the non-drilling downhole operation comprises milling away by the pilot mill of a
- 4 portion of a tubular member within the wellbore; and
- 5 c) the condition sensing tool detects at least some of the downhole conditions from the
- 6 set of conditions consisting essentially of torque, direction of rotation, speed of
- 7 rotation, weight, tool string compression, and tool string tension.

1 24. The method of claim 14 wherein:

- 2 a) the workpiece comprises a washover tool;
- 3 b) the non-drilling downhole operation comprises a washover operation for cutting away
- 4 portions of a formation surrounding a stuck object within the wellbore; and

5 c) the condition sensing tool detects torque.

1 25. The method of claim 24 wherein the condition sensing tool further detects speed and
2 direction of rotation.